

## CLAIMS

### 1. A drive circuit comprised of the following:

a switching power supply,

a switch that interrupts the power supplied from the switching power supply to the driven object,

a detecting means that detects the current flowing in the driven object and outputs a detection signal corresponding to the detection result,

an error signal generating means that generates an error signal corresponding to the error between the detection signal output from the detecting means and the setpoint signal,

a signal holding means that averages the error signal generated by the error signal generating means when the switch is on, holds the averaged error signal when the switch is turned off from the on state, and starts the averaging of the error signal with the level of the held error signal as the initial level when the switch is turned on from the off state, and

a switching power supply control means that controls the switching power supply to stop the supply of power to the driven object when the switch is off and controls the power supplied by the switching power supply to the driven object corresponding to the error signal averaged by the signal holding means when the switch is on.

### 2. A drive circuit comprised of the following:

a switching power supply,

a switch that interrupts the power supplied from the switching power supply to the driven object,

a detecting means that detects the current flowing in the driven object and outputs a detection signal corresponding to the detection result,

a signal holding means that averages the detection signal generated by the detecting means when the switch is on, holds the averaged detection signal when the switch is turned off from the on state, and starts the averaging of the error signal with the level of the held error signal as the initial level when the switch is turned on from the off state,

an error signal generating means that generates an error signal corresponding to the error between the detection signal averaged by the signal holding means and the setpoint signal, and

a switching power supply control means that controls the switching power supply to stop the supply of power to the driven object when the switch is off and controls the power supplied by the switching power supply to the driven object corresponding to the error signal generated by the error signal generating means.

3. The drive circuit described in Claim 1 characterized by the fact that the signal holding means holds the error signal before the switch is turned off and starts the averaging of the error signal after the switch is turned on.

4. The drive circuit described in Claim 2 characterized by the fact that the signal holding means holds the detection signal before the switch is turned off and starts the averaging of the detection signal after the switch is turned on.

5. The drive circuit described in any of Claims 2 characterized by having a switch control means that turns the switch on and off at a prescribed phase of the switching period of the switching power supply.

6. The drive circuit described in Claim 5 characterized by the fact that the switching power supply control means switches the switching power supply synchronously with an input clock signal, and

the switch control means controls the turning on and off of the switch synchronously with the clock signal.

7. The drive circuit described in any of Claims 6 characterized by the fact that the driven object is one or more series connected light-emitting elements.

8. The drive circuit described in any of Claims 2 characterized by the fact that the switching power supply is a boost type switching power supply.

9. A drive circuit having the following:

a first switching element that controls the supply of current to a driven object element,  
a second switching element connected to an inductive element in the power supply circuit that supplies the current to the driven object element,

an error signal generating circuit that compares the detection signal corresponding to the current flowing in the driven object element with a reference signal and generates an error signal corresponding to the comparison result, and

a power supply control circuit that generates a drive pulse signal used for driving the second switching element based on the error signal and supplies it to the second switching element synchronously with the control pulse signal that controls the first switching element.

10. The drive circuit described in Claim 9 characterized by the fact that the power supply control circuit has a triangle wave signal generating circuit that can generate triangle wave signal, a comparator that compares the error signal supplied as a voltage signal with the triangle wave signal, and a logic circuit that inputs the signal output from the comparator and outputs the drive pulse signal synchronously with the control pulse signal.

11. The drive circuit described in Claim 10 characterized by the fact that the triangle wave signal and the control pulse signal are generated on the basis of a reference clock signal.

12. The drive circuit described in Claim 11 characterized by the fact that the drive circuit has a signal holding circuit that inputs the error signal supplied from the error signal generating circuit synchronously with the control pulse signal and outputs the held error signal to the power supply control circuit, and that

the error signal generating circuit has a differential amplifier, which compares the voltage signal corresponding to the detection signal with a reference voltage signal, and a first switching element that supplies the detection signal to the differential amplifier synchronously with the control pulse signal.

13. The drive circuit described in Claim 12 characterized by the fact that the power supply circuit has a diode, the anode of which is connected to the connection point between the inductive element and the second switching element and the cathode of which is connected to the driven object element, and a capacitor connected to the cathode of the diode, and that the detection signal is generated by a resistor connected in the current path of the driven object element.

14. The drive circuit described in Claim 13 characterized by the fact that the driven object element is one or more series connected light-emitting diodes, and the first and second switching element are MOS transistors.